

May H. Abdelaziz, BPharm, MS, PhD

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APPOINTMENTS

- Assistant Professor** (Tenure track) Jan 2018 - present
Pharmaceutical Sciences Department, Ben and Maytee Fisch College of Pharmacy
(FCOP), The University of Texas, Tyler (UT Tyler) – Tyler, TX
- Clinical Assistant Professor** (Non-tenure track) June 2017 - Dec 2017
Clinical Sciences Department, FCOP, UT Tyler – Tyler, TX

EDUCATION

- Doctor of Philosophy** Feb 2013
Pharmaceutical Sciences – School of Pharmacy
Virginia Commonwealth University (VCU)– Richmond, VA
Dissertation title: *Kinetic and Thermodynamic Studies of Thrombin Inhibitors*
- Master of Science** June 2008
Pharmaceutical Chemistry – School of Pharmacy
Cairo University – Cairo, Egypt
Thesis title: *Determination of Some Antifungal Agents*
- Bachelor of Pharmaceutical Sciences (with honors)** May 2002
School of Pharmacy
Cairo University – Cairo, Egypt

RESEARCH EXPERIENCE

- Independent Research (UT Tyler)** June 2017 - present
Leading a research program centered around drug discovery of chemotherapeutic agents in the cancer and infectious disease fields. Current projects include discovery of novel agents for disruption of HER receptors' kinase domains dimerization, protein engineering of artificial HER receptors, deciphering the bacterial systems linked to antibiotic resistance, designing resistance modifying agents to extend the efficacy of current antibiotics.
- Postdoctoral Fellow: University of California – San Francisco (UCSF)** 2015 – 2017
Advisor: Michelle Arkin
Investigated novel protein-protein interactions involved in the progression of glioblastoma and study the oncoproteins HER2 and HER3. The project involved expression, purification and characterization of proteins in E. Coli, yeast and insect cells and delineating their interactions in-vitro using several biophysical techniques.

Postdoctoral Fellow: University of Utah (U of U) 2013 – 2014

Advisor: Christopher Reilly

Responsible of screening libraries of natural products against a panel of TRP channels (TRPV1, TRPV3, TRPV4, TRPM8 and TRPA1) using mammalian cell-based assays. Identified hits were further characterized to determine their mode of action potency and selectivity.

Doctoral Candidate: (VCU) 2008 – 2013

Advisor: Umesh Desai

Developed the first in class small molecule allosteric thrombin inhibitors that interact with exosite II and deciphered the role of exosite II in thrombin allosteric network. Methodologies included enzyme kinetics, competitive assays, thrombin mutants screening, biophysical techniques like fluorescence binding, thermodynamic analysis and surface plasmon resonance as well as computer modeling (virtual libraries building and docking).

Master student: (Cairo University – Cairo, Egypt) 2003 – 2008

Advisor: Samy Emara

Developed new validated methods for determination of some antifungal agents in pure form, pharmaceutical dosage forms, metabolite detection and in biological fluids (serum and urine).

FUNDED GRANTS

FCOP Research and Scholarship Grant (**\$11,000**) July 2022 – Jun 2023

“Design and characterization of electrospun nanofiber membrane for antibacterial drug delivery”

Role: Co-PI

UT Tyler ORS Faculty Research Support (**\$100,000**) Jan 2022 – Aug 2023

This fund is allocated to hire a postdoctoral research associate to support faculty’s research program.

Role: PI

FCOP Assessment Grant (**\$5,604**) July 2021 – June 2022

“Prediction and Utilization of PCOA Scores in Fisch College of Pharmacy”

Role: PI

NIH R21AI154189 (**\$380,750**) Feb 2021 – Jan 2023

“Mechanistic Insights into VraS Mutations Linked to Bacterial Resistance”

Role: PI

FCOP Research and Scholarship Grant (**\$10,000**) July 2020 – Jun 2021

“VraS Mutant Inhibition and Recombineering Using CRISPR/Cas9 Counterselection”

Role: PI

American Association of University Women (AAUW)

Research Publication Grant (**\$25,650**)

July 2019 – June 2020

“Optimizing the expression of kinases in *E. coli*”

Role: PI

FCOP Research and Scholarship Grant (**\$22,500**)

July 2018 – June 2020

“Designing Artificial EGF Receptors Capable of Spontaneous Dimerization”

Role: PI

UT Tyler New Faculty Grant (**\$10,000**)

Sept 2018 – Aug 2019

“Discovering Novel Allosteric Inhibitors of HER2 Homodimerization in Cancer”

Role: PI

UT Tyler Undergraduate Research Award (**\$3,000**)

Sept 2018 – Aug 2019

“Designing Artificial EGF Receptors Capable of Spontaneous Dimerization”

Role: Co-PI

PENDING GRANTS

DP2 Grant (NIH) (**\$2,192,550**)

“Discovery and validation of the first-in-class allosteric HER2 dimerization inhibitors”

Role: PI

R15 Grant (NCI/NIH) (**\$447,250**)

“Characterization of HER2 inhibitors with a novel mechanism of action”

Role: PI

PUBLICATIONS AND BOOK CHAPTERS

#Corresponding author, Undergraduate student, PharmD student

The Sensor Histidine Kinase VraS Mutations Linked to Antibiotic Resistance Affect Enzymatic Catalysis and Stability. B Cagle-White, S Bhattarai, E Scott, A Sunderhaus, A Solis, K Catague, **MH Abdel Aziz**[#]. Under preparation.

Discovery and Validation of Novel Allosteric HER2 Homodimerization Inhibitor. S Bhattarai, B Cagle-White, HS Sibal, O Overinde, **MH Abdel Aziz**[#]. Under revision.

Expression of Human Kinases in Bacterial Host Systems: A Comprehensive Review. B Cagle-White, H Sibal, R Imran and **MH Abdel Aziz**[#]. Under revision.

Differential Activity and Inhibition of VraS Sensor Kinase from *Staphylococcus aureus* in Presence

of its Cognate Response Regulator, VraR. S Bhattarai, L Marsh, K Knight, L Ali, A Gomez, A Sunderhaus, and **MH Abdel Aziz**[#]. Under peer review.

Comparative Expression of Soluble, Active Human Kinases in Specialized Bacterial Strains. A Sunderhaus, R Imran, E Enoch, A Adedeji, T Obafemi and **MH Abdelaziz**[#]. *PLoS ONE* (2022) 17(4): e0267226.

Engineering Soluble Artificial Receptor Tyrosine Kinase Mimics Capable of Spontaneous *in vitro* dimerization. A Sunderhaus, R Imran, A Godelock, M Nassar, K Cooper, D Patterson, and **MH Abdel Aziz**[#]. *Biotechnol Bioeng.* 118 (2021) 1466–1475

Expression and Purification of Active Human Kinases Using *Pichia pastoris* as A General-Purpose Host. **MH Abdel Aziz**[#], Y Fan, L Liu, M Moasser, H Fu, N Jura, M Arkin. *Prot. Exp. Puri.* 179 (2021) 105780.

Onydecalsins, Fungal Polyketides with Anti-Histoplasma and Anti-TRP Activity. L Zhenjian, P Sujal, Z Lu, S Beyhan, **MH Abdel Aziz**, C Reilly, and EW Schmidt. *J. Nat. Prod.* 81(12) (2018) 2605-11.

Novel Heparin Mimetics Reveal Cooperativity Between Exosite 2 and Sodium-Binding Site of Thrombin. **MH Abdel Aziz** and UR Desai. *Thromb. Res.* 165 (2018) 61-67.

Drofenine: A 2-APB analog with improved selectivity for human TRPV3. CE Deering-Rice, VK Mitchell, EG Romero, **MH Abdel Aziz**, DA Ryskamp, D Križaj, RG Venkat, CA Reilly. *Pharma. Res. Per.* 2(5) (2014) e00062.

Oxazin A, A Fungal Dimeric Polyketide. Z Lin, M Koch, **MH Abdel Aziz**, D Tianero, R Galindo, T Cheatham III, L Barrows, CA Reilly, E Schmidt. *Org. Lett.* 16 (18) (2014) 4774-77

Designing Allosteric Regulators of Thrombin: Exosite 2 Features Multiple Sub-Sites That Can Be Targeted by Sulfated Small Molecules for Inducing Inhibition. PS Sidhu^{*}, **MH Abdel Aziz**^{*}, A Sarkar, AY Mehta, Q Zhou, UR Desai. *J. Med. Chem.* 56 (12) (2013) 5059–70. ^{*} Equally contributing authors.

Designing allosteric regulators of thrombin: Monosulfated benzofuran dimers selectively interact with Arg173 of exosite 2 to induce inhibition. **MH Abdel Aziz**, PS Sidhu, A Liang, JY Kim, PD Mosier, Q Zhou, DH Farrell, UR Desai. *J. Med. Chem.* 55 (2012) 6888 – 97.

Identification of the site of binding of sulfated low molecular weight lignins on thrombin. **MH Abdel Aziz**, PD Mosier, UR Desai. *Biochem. Biophys. Res. Commun.* 413 (2011) 348 – 52.

Rational design of potent, small, synthetic allosteric inhibitors of thrombin. PS Sidhu, A Liang, AY Mehta, **MH Abdel Aziz**, Q Zhou, UR Desai. *J. Med. Chem.* 54 (2011) 5522 – 31.

Sulfated, low-molecular-weight lignins are potent inhibitors of plasmin, in addition to thrombin and factor Xa: Novel opportunity for controlling complex pathologies. BL Henry, **MH Abdel Aziz**, Q Zhou, UR Desai. *Thrombosis and Haemostasis* 103 (2010) 507–15.

Cardiovascular Agents. UR Desai, R Al-Horani, AY Mehta and **MH Abdel Aziz** (2013). In *The Chemistry of Drugs for Nurse Anesthetists – 2nd Edition* (Eds. Drs. Lemont B. Kier and Cynthia Schiek), AANA Publishing, Park Ridge, IL.

INVITED PRESENTATIONS

Biomedical Research APPEs: Opportunities and Challenges. MH Abdelaziz. Presented at the FCOP Preceptor Conference. December 10, 2022.

Engineered tyrosine kinase receptor dimers as a drug discovery tool. MH Abdelaziz. **Podium Presentation** at the Southern Biomedical Engineering Conference. August 27, 2022.

An Artificial Receptor Model for Discovering Protein–Protein Interaction Inhibitors. MH Abdelaziz. **Keynote Address**. Indiana University Postdoctoral Symposium. October 15, 2021.

POSTERS (Undergraduate student, PharmD student)

Design and characterization of electrospun nanofiber membrane for antibacterial drug delivery. S Karkj, A Neelam, B Cagle-White, A Solis, L Ali, O Alsmairat, S Aryal, MH Abdel Aziz. Presented at the Southern Biomedical Engineering Conference. August 26, 2022. (**Third place, Undergraduate Student Poster Award**).

Exploring the effect of mutations on the activity and stability of the bacterial histidine kinase VraS. E Scott, A Sunderhaus, S Bhattarai, K Catague, B Cagle-White, MH Abdel Aziz. Presented at the ACS National Meeting. March 21, 2022.

Activation of VraS histidine kinase by T331I mutation linked to antibiotic resistance. S Bhattarai, A Sunderhaus, L Marsh, and MH Abdel Aziz. **Selected for the “Live Poster” session** at the ACS National Meeting. April 10, 2021.

Modulation of VraS Sensor Histidine Kinase Activity and Inhibition in Presence of its Response Regulator VraR. L Marsh, S Bhattarai, A Sunderhaus, P Epie, and MH Abdel Aziz. Presented at the Texas Academy of Science. February 27, 2021.

Characterization of VraS Kinase Involved in Bacterial Resistance. A Gomez, S Bhattarai, V Ikegbunam, A Sunderhaus, and MH Abdel Aziz. Presented at the UT Tyler Lyceum, Tyler, TX. April 17, 2020. (**First place, Graduate Student Poster Award**).

The Cellular Effects of An Allosteric HER2 Homodimerization Inhibitor. S Bhattarai, R Imran and MH Abdel Aziz. Presented at the UT Tyler Lyceum, Tyler, TX. April 17, 2020

Discovering novel anticancer allosteric inhibitors of HER2 homodimerization. H Sibal, O Oyerinde, P Amadi-Ohiri, PD Mosier, MH Abdel Aziz. Presented at the ACS National Meeting. Philadelphia, PA. March 22, 2020.

Optimizing the expression of soluble, active human kinases using specialized *E.coli* strains. R Imran, A Adedeji, T Obafemi, MH Abdel Aziz. Presented at the ACS National Meeting, Philadelphia, PA. March 22, 2020.

De-novo design and engineering of soluble artificial kinase receptor proteins. M. Nassar, D. Patterson and MH Abdel Aziz. Presented at the Texas Academy of Science Meeting, Nacogdoches, TX. February 28, 2020.

Discovering Potential Novel Allosteric Inhibitors of HER2 Homodimerization for Treatment of Cancer. PD Mosier and MH Abdel Aziz. Presented at the East Texas Research Conference. Tyler, TX. May 9, 2019.

Optimizing the Expression of Human Heparanase in Insect Cells. E Enoch; H Sibal, R Imran; and MH Abdel Aziz. Presented at the East Texas Research Conference. Tyler, TX. May 9, 2019.

Sulfated low molecular weight lignins bind to a specific pocket in thrombin exosite 2. MH Abdel Aziz, BL Henry, PD Mosier, UR Desai. Presented at the *ACS Southeastern Regional Meeting*. Richmond, VA. October 27, 2011.

Identification of the site of binding of sulfated low molecular weight lignins on thrombin. MH Abdel Aziz, JN Thakkar, BL Henry, A Liang, PD Mosier, UR Desai. Presented at the *Virginia Academy of Sciences meeting*. Richmond, VA. May 26, 2011.

TEACHING EXPERIENCE (in Team-Based Learning format)

Coordinator and Instructor, Introduction to medicinal Chemistry (UT Tyler) (2019 - present)

Coordinator and Instructor, Integrated Lab 12 (UT Tyler) (Spring and Fall 2018)

Instructor, Integrated Pharmacy Courses (UT Tyler) (2017 - present)

Develop and conduct medicinal chemistry modules and integrated content with pharmacology, pathophysiology, and pharmacotherapy instructors. Several pharmacotherapy modules were taught including cardiovascular, endocrinology, infectious diseases, neuroleptics and centrally acting agents and oncology courses.

Trainer, NIH Programs of Excellence in Glycosciences (VCU) Spring 2013

Experimental design and training of visiting scholars on capillary electrophoresis and surface plasmon resonance techniques in glycobiology.

Tutor, Medicinal Chemistry for Nurse Anesthesia (VCU) Spring 2011

Medicinal Chemistry Teaching Assistant (VCU) 2008 – 2011

Foundations I and II

Applications of Pharmaceutical Analysis/Skills Lab III

Molecular Modeling

Pharmaceutical Chemistry Lab Instructor (MIU) 2002 – 2008

Pharmaceutical Chemistry I and II, and Drug Design

RESEARCH FOCUSED SERVICE

Research Advisor for UT Tyler Presidential Fellows Fall 2019–present

Past Chair, UT Tyler Research Council (member since 2019) 2020-2022

Graduate School Representative in dissertation committees Fall 2018–present

Thesis Committee Member for 3 Masters students 2020–2022

Reviewer for several scientific journals 2018–present

Developed FCOP research initiative for UT Tyler strategic plan Fall 2017

Member in the Faculty Senate task force for Interdisciplinary Research (UT Tyler) 2017/2018

Member in FCOP Research Lab Design ad-hoc committee (UT Tyler) 2017/2018

Member in Central Lab Manager search committee (UCSF) Fall 2016

Judge, UT Tyler Lyceum 2019–present

PROFESSIONAL AND ACADEMIC FOCUSED SERVICE

Member, Assessment Committee (FCOP) 2022/2023

UT Tyler Diversity and Inclusion Taskforce (UT Tyler) 2020/2021

Past Chair, Curriculum Committee (member since 2018) (FCOP) 2019-2022

Member and chair in AACP Accreditation Self Study committee (FCOP) 2017-2019

Member in AACP Accreditation Steering committee (FCOP) 2020-2022

Member in 6 Faculty/postdocs/technicians Search Committees (FCOP) 2019–2022

Abstract Reviewer for the AACP Annual Meeting 2020–present

Member in 2 ORS office search committees (UT Tyler) 2020–2021

Book Reviewer for John Wiley & Sons Spring 2019

Member in Wellness Taskforce (FCOP) 2019–present

Member in OSCE Committee (FCOP) 2018/2019

Member in strategic planning Committee (FCOP) 2019–2021

Reviewer for AACP Express Script Scholar Program Fall 2019

President, Graduate Students Association (VCU) 2011/2012

International Pharmacy Student advisor (MIU) 2005 – 2008

Member, Quality Assurance of Academic Education (MIU) 2006 – 2008

Supervisor, Research Center (MIU) 2005 – 2006

CERTIFICATES

TBL Practitioner Certificate, TBL Collaborative Mar 2021

Fundamentals of TBL, TBL Collaborative	Feb 2019
Science Teaching Effectiveness Program for Upcoming Professors, UCSF	April 2016
Research Administration Training Series, U of U	2013
The Pre-Award Certificate proposal development and funding search process.	
The Post-Award Certificate accounting and project management aspects.	
The Research Investigator Certificate research integrity in the context of scientific management.	
The Responsible Conduct of Research Certificate ethical issues involved in research.	

AWARDS AND HONORS

Virginia Commonwealth University 10 under 10 Award	2021
Teacher of The Year Award	2019
Dean's Award for Excellence in Graduate Studies (VCU)	2013
Graduate School Dissertation Award (VCU)	2012
Certificate of Excellence for Outstanding Performance (MIU)	2007

RESEARCH TRAINEES' ACHIEVEMENTS

Third place, Undergraduate Student Poster Award (Salima Karki)	2022
USPHS Student Externship (PharmD student: Kristina Catague)	2022
FDA Pharmacy Student Experiential Program (Emerald Scott)	2022
Student Employee Rising Star Award (Undergraduate: Allison Sunderhaus)	2022
Summer Internship – Quest Diagnostic (Undergraduate: Allison Sunderhaus)	2021
American Chemical Society Bridge Travel Award (PharmD student: Elanzou Enoh)	2020
First place, Graduate Student Poster Award (PharmD student: Antonio Gomez)	2020

PROFESSIONAL AFFILIATIONS

American Chemical Society (ACS)	2011 – Present
National Center for Faculty Development and Diversity	2013 – Present
American Association of Colleges of Pharmacy (AACCP)	Lifetime member
American Association for University Women (AAUW)	2018 – Present
American Association for Cancer Research (AACR)	2019 – Present
American Society of Microbiology (ASM)	2019 – Present